

HALLIBURTON

CEMENT BOND LOG
GR-CCL

| | | | | | | | |
|------------------------------------|--|--|--|--|--|--|--|
| Company | | | | URSA OPERATING COMPANY | | | |
| Well | | | | BMC D 22A-18-07-95 | | | |
| Field | | | | WILDCAT | | | |
| County | | | | GARFIELD State CO | | | |
| Company | | | | URSA OPERATING COMPANY | | | |
| Well | | | | BMC D 22A-18-07-95 | | | |
| Field | | | | WILDCAT | | | |
| County | | | | GARFIELD State CO | | | |
| API No.: 05045233150000 | | | | Serv #: 904057337 | | | |
| Location: SHL: 1236' FNL 2355' FWL | | | | Other Services | | | |
| BHL: 1598' FNL & 1901' FWL | | | | JB-GR RMT-i | | | |
| Permanent Datum | | | | Ground Level Elevation 5268' | | | |
| Log Measured From | | | | KB , 17 Ft. above perm. datum | | | |
| Drilling Measured From | | | | KB | | | |
| Date @ Time Logged | | | | 29-MAY-2017 | | | |
| Run No. | | | | ONE | | | |
| Depth - Driller | | | | 6596 FT | | | |
| Depth - Logger | | | | 6184 FT | | | |
| Bottom - Logged Interval | | | | 6177 FT | | | |
| Top - Log Interval | | | | 1700 FT | | | |
| Max. Recorded Temp. | | | | 195 °F | | | |
| CEMENTING DATA | | | | Surface Protection String | | | |
| Date / Time Cemented | | | | String | | | |
| Primary / Squeeze | | | | String | | | |
| Expected Compressive Strength | | | | psi@ hrs | | | |
| Cement Volume | | | | psi@ hrs | | | |
| Cement Type / Weight | | | | psi@ hrs | | | |
| Formulation | | | | psi@ hrs | | | |
| Mud Type / Mud Wgt. | | | | psi@ hrs | | | |
| Borehole Record | | | | Casing & Tubing Record | | | |
| Run Number | | | | Bit From To Size Weight From To | | | |
| ONE | | | | 24" SURFACE 60' 16" 75 SURFACE 60' | | | |
| TWO | | | | 12.25" SURFACE 1700' 8.625" 32 SURFACE 1700' | | | |
| THREE | | | | 7.875" SURFACE 6596' 4.5" 11.6 SURFACE 6596' | | | |

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HES Reservoir Monitor Log First run in to the Hole
Log Correlated By the KB 17'
Log Interval per customer Request
Log Ran in combo with RMT-i tool

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES ROCK SPRING WY

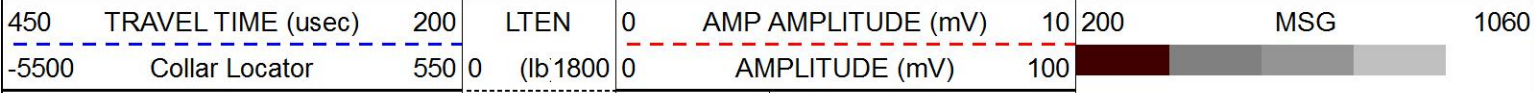
Comments

MAIN PASS

5"=100'

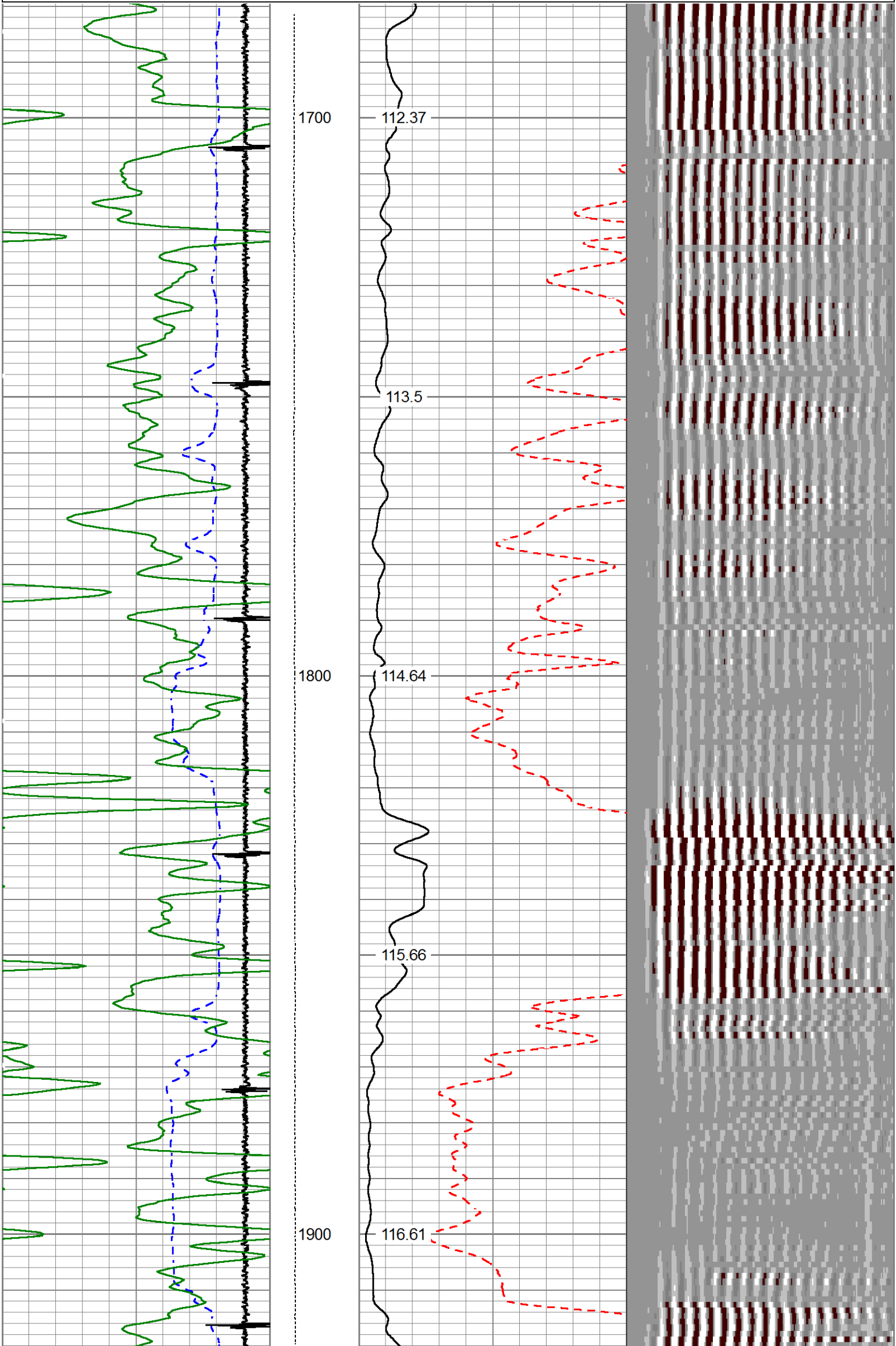
HALLIBURTON

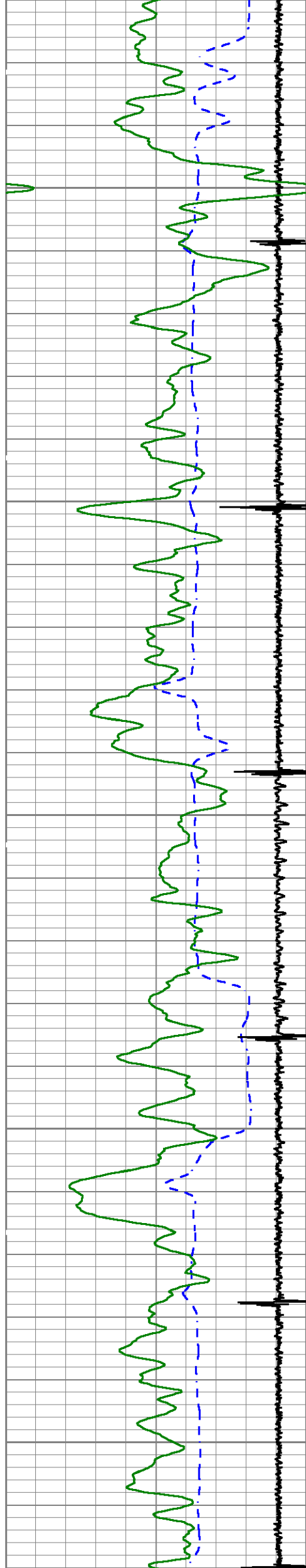
Database File bmc d 22a-18-07-95.db
Dataset Pathname wc/BMC_D_22A-18-07-95/run1/MAIN
Presentation Format cbl_main
Dataset Creation Mon May 29 18:40:29 2017
Charted by Depth in Feet scaled 1:240



Gamma Ray (GAPI) 150

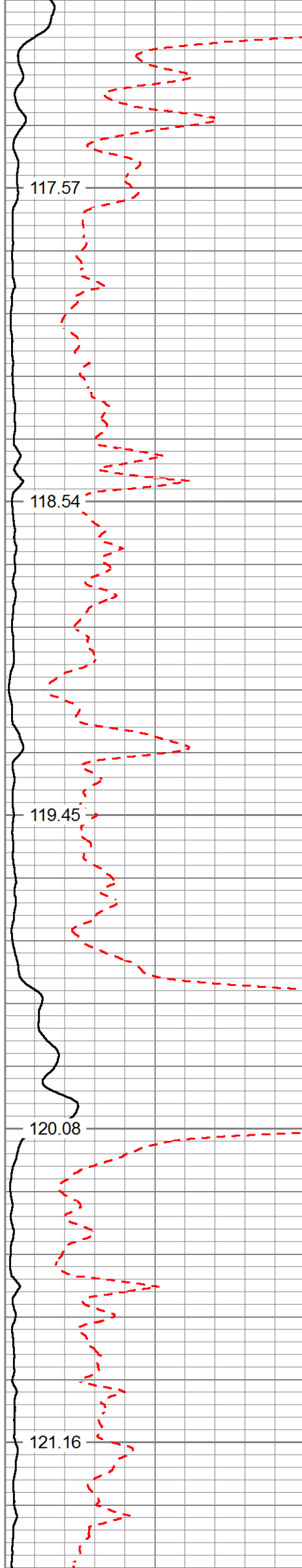
Cblntemp
(degF)





2000

2100



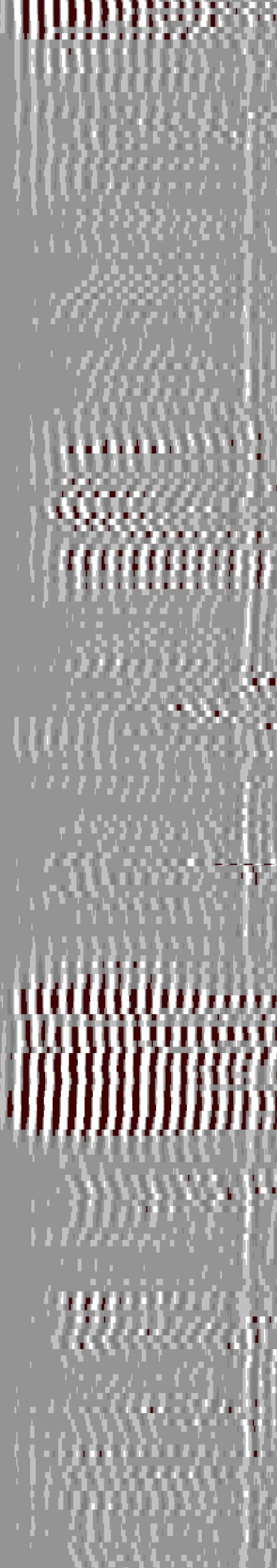
117.57

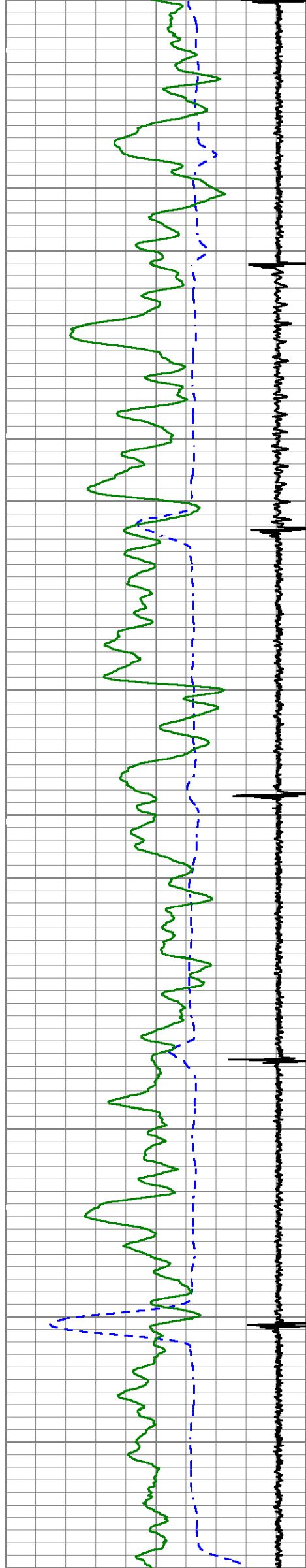
118.54

119.45

120.08

121.16

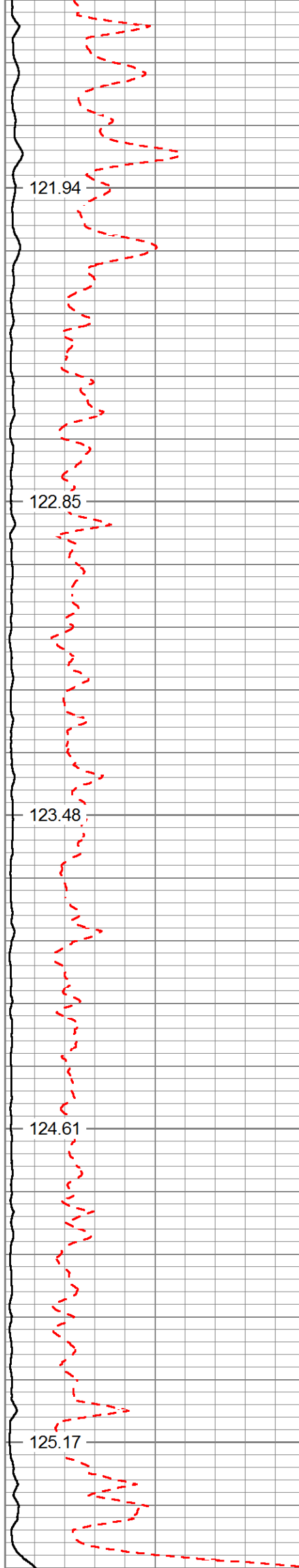




2200

2300

2400



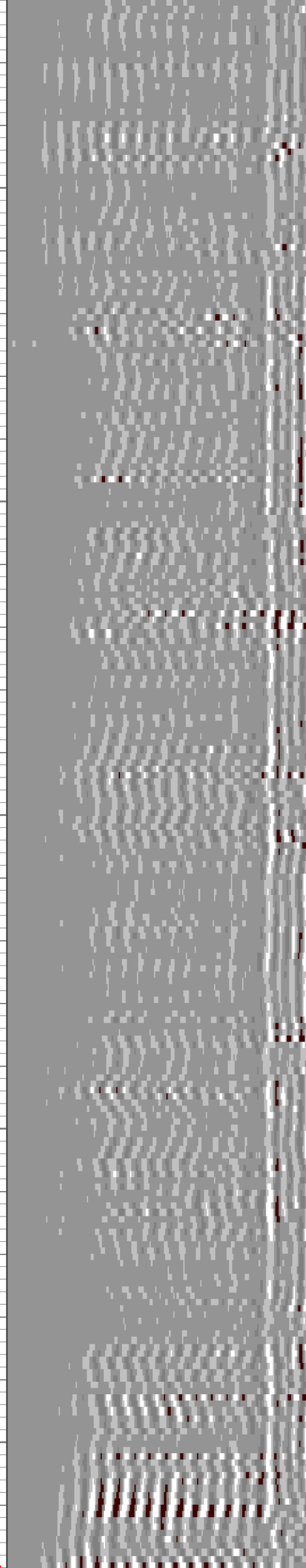
121.94

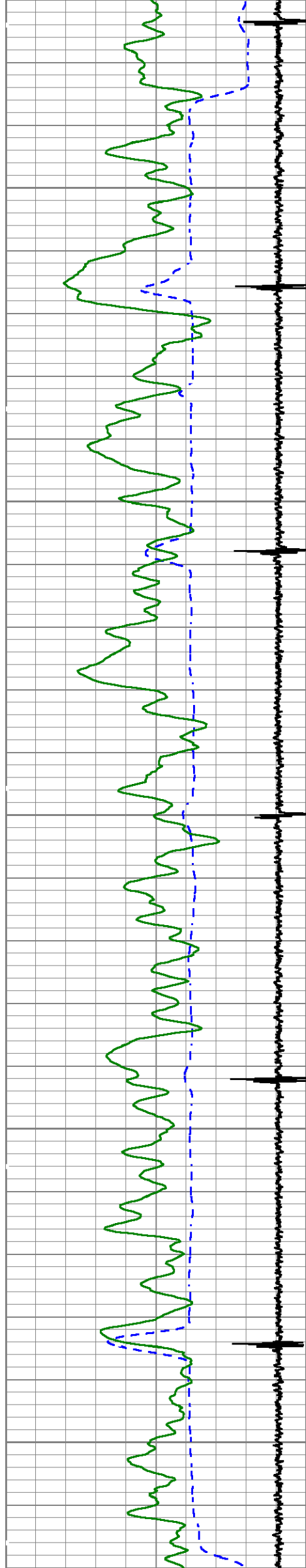
122.85

123.48

124.61

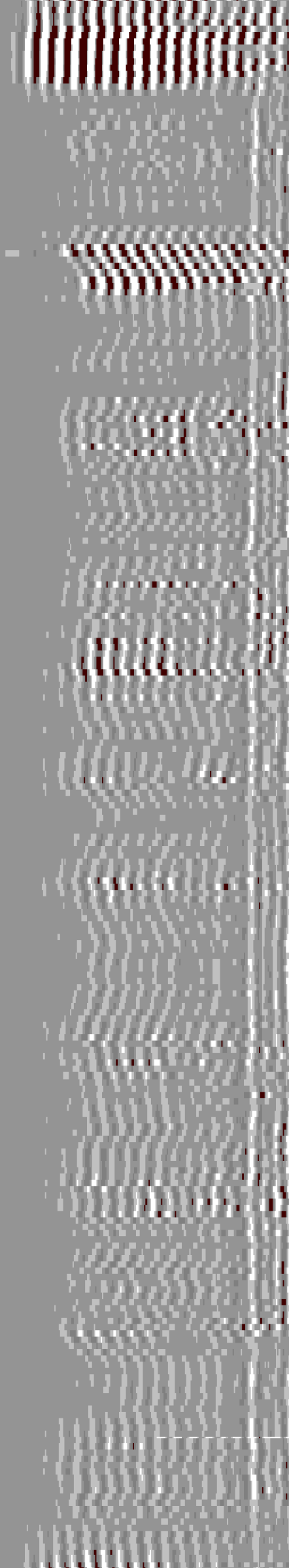
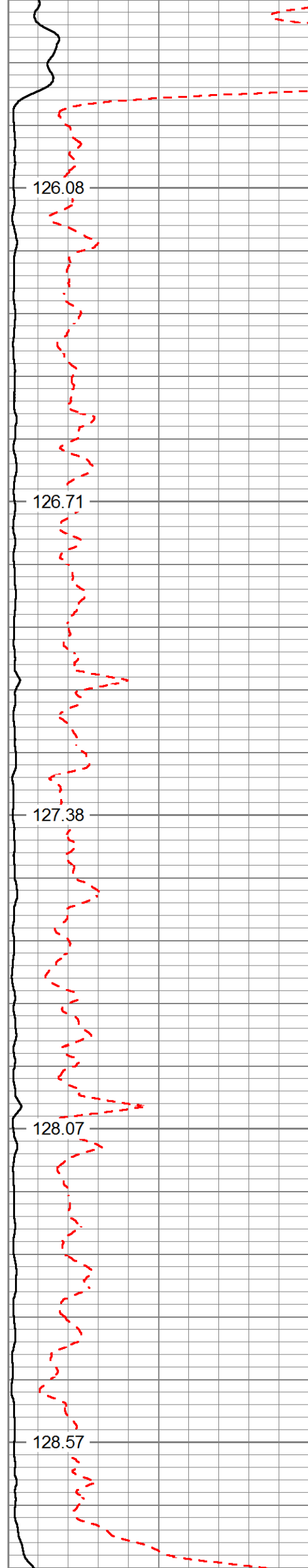
125.17

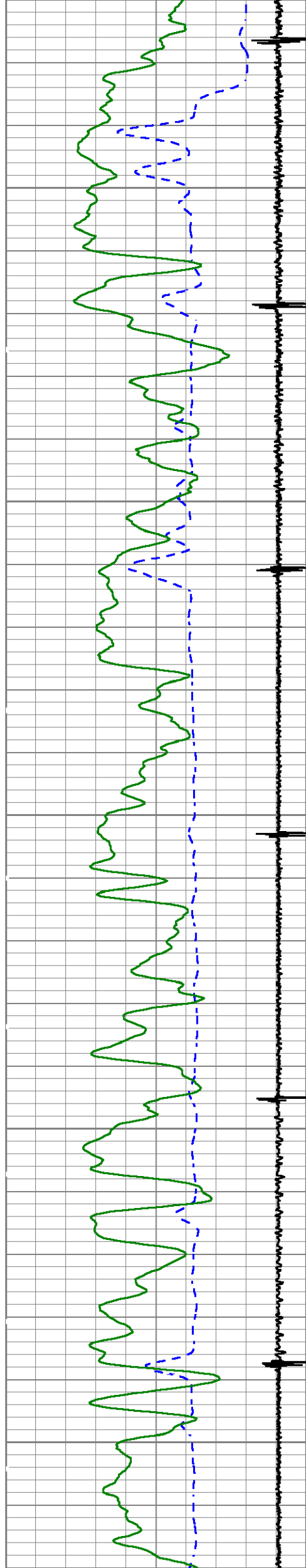




2500

2600

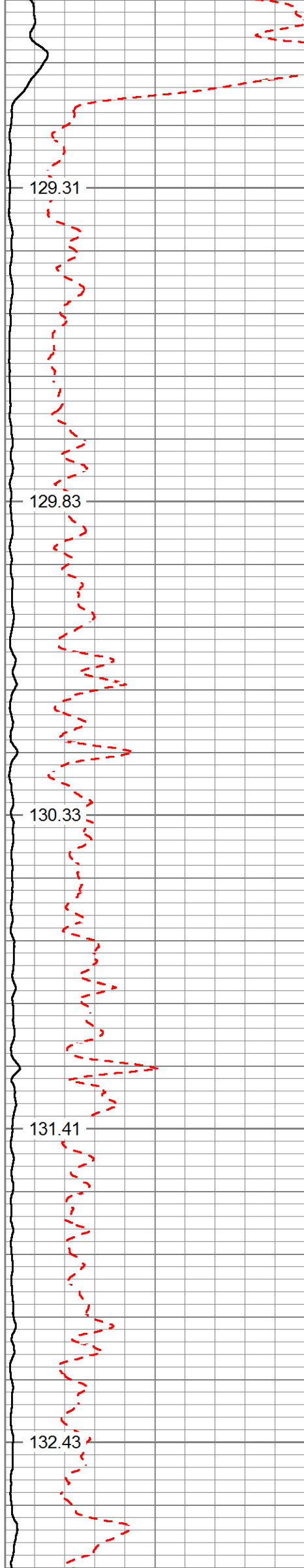




2700

2800

2900



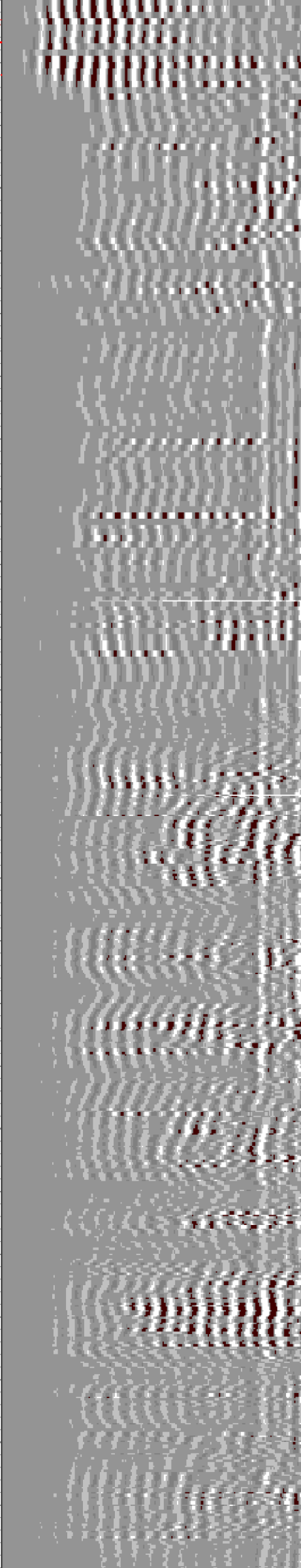
129.31

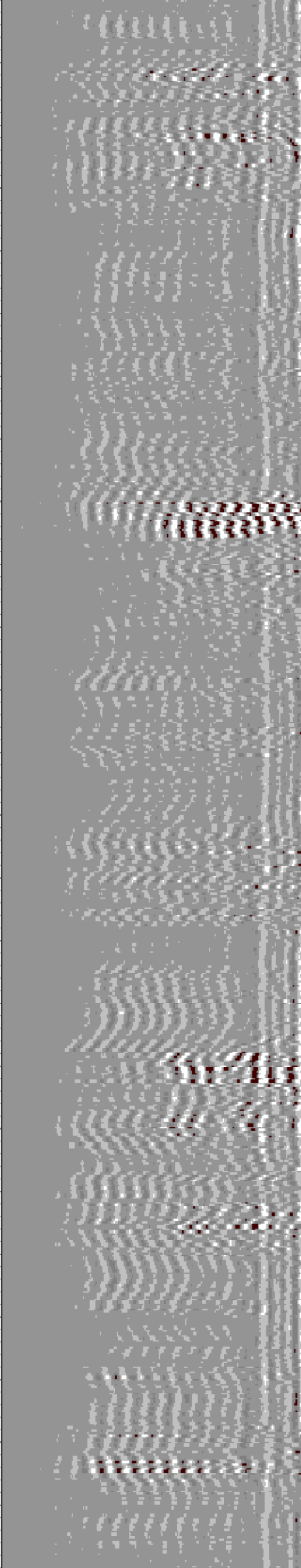
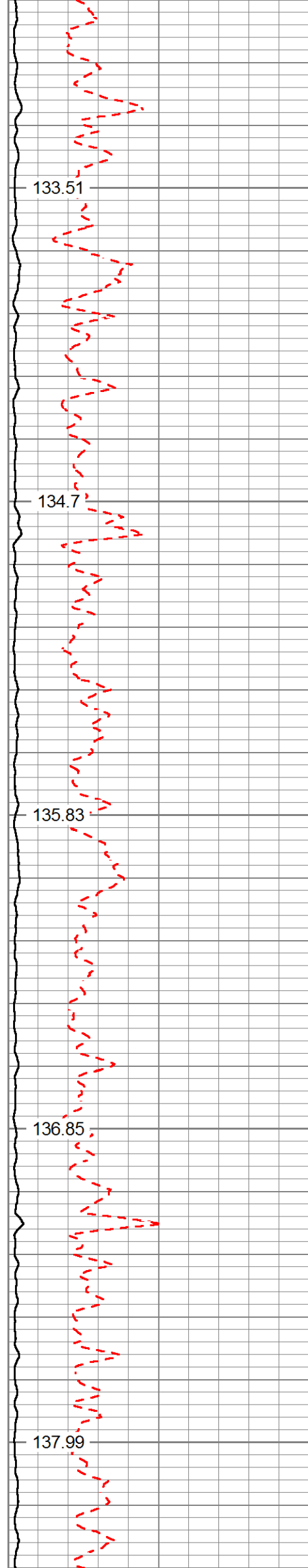
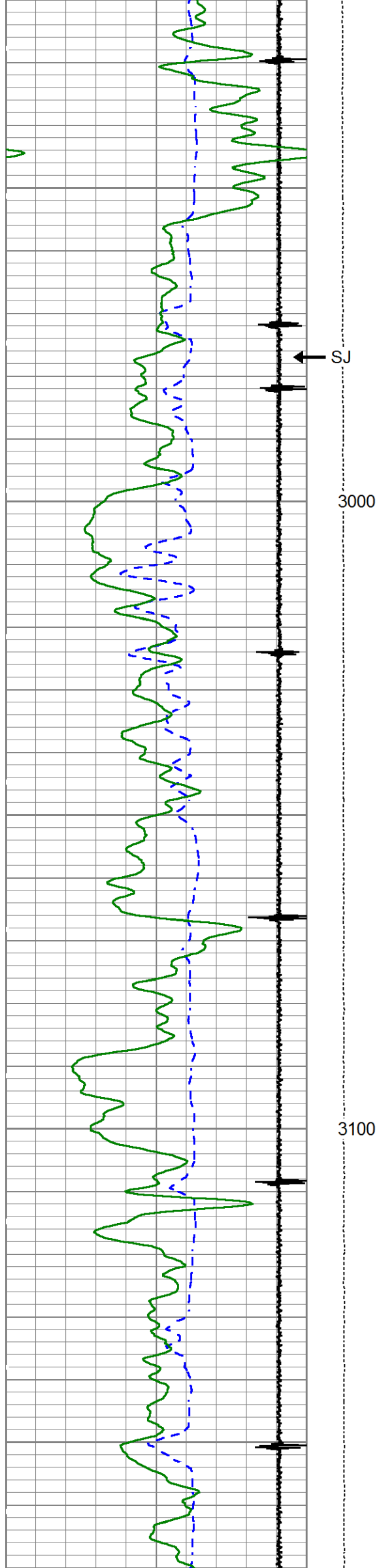
129.83

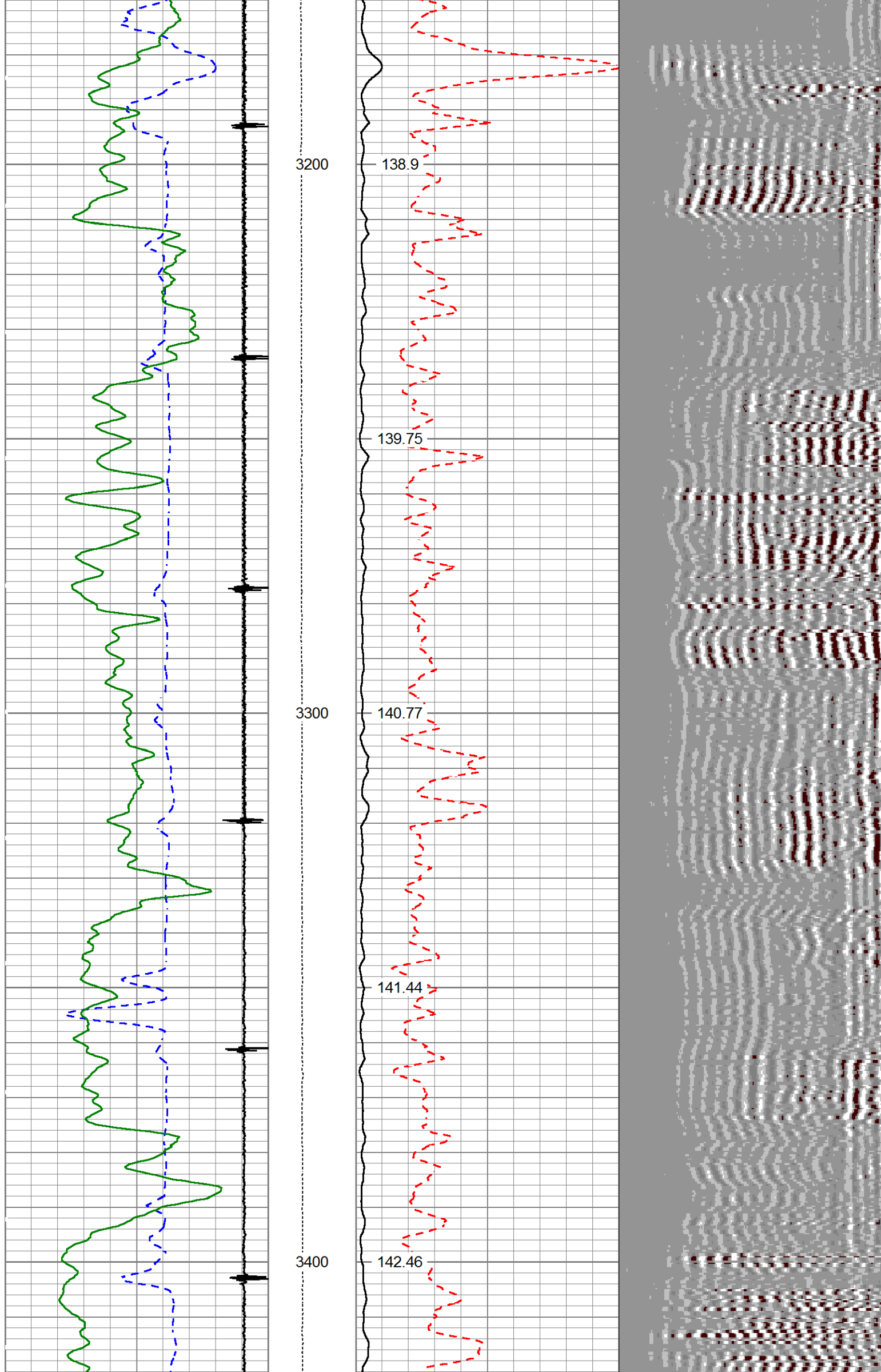
130.33

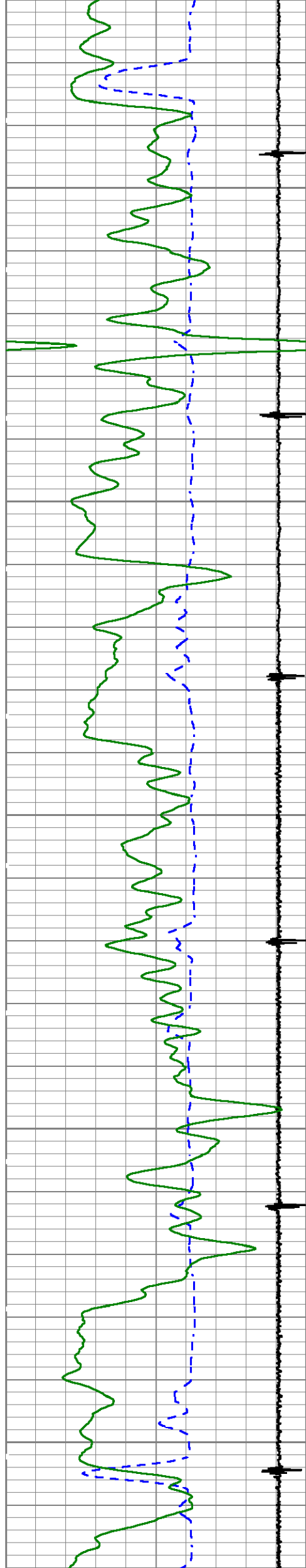
131.41

132.43



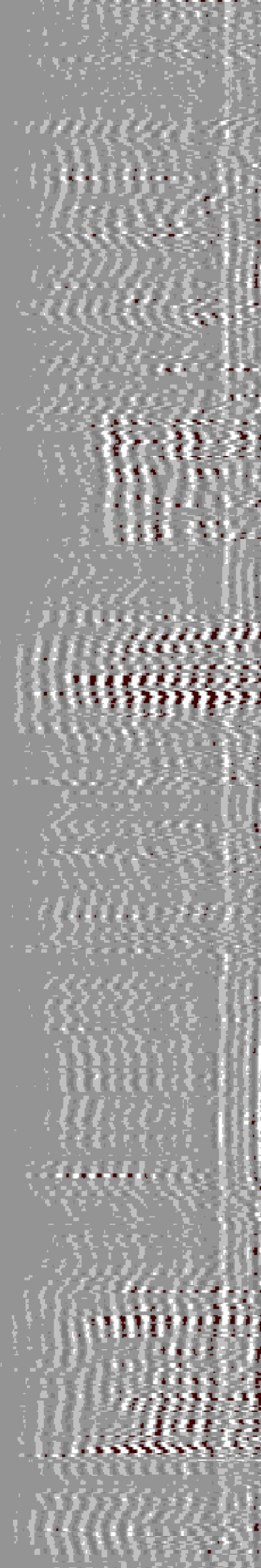
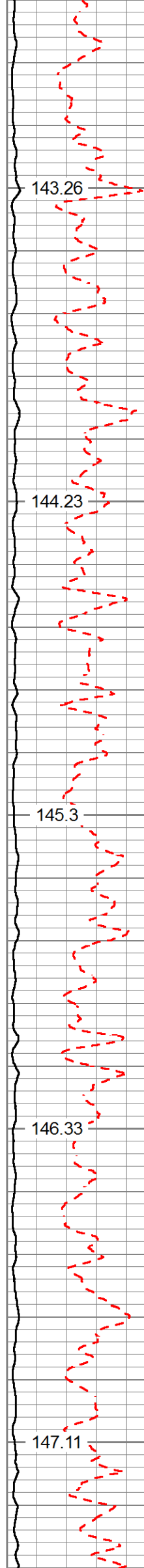


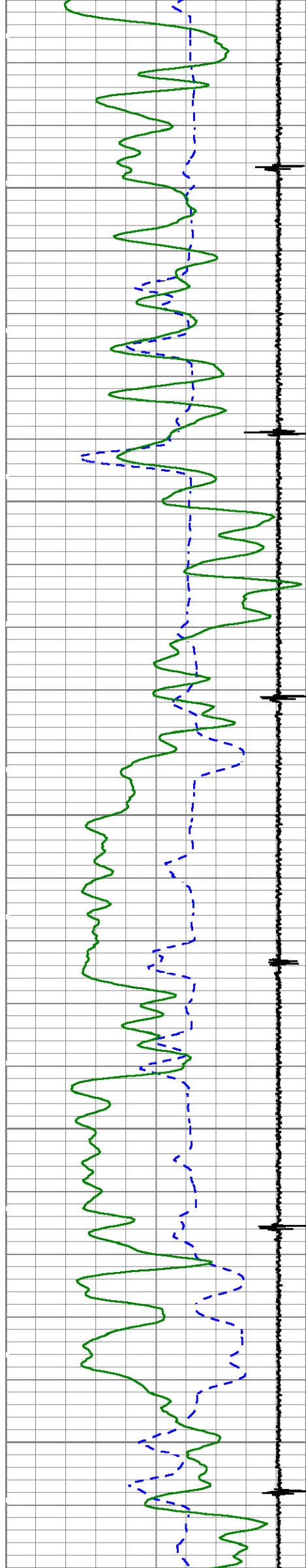




3500

3600

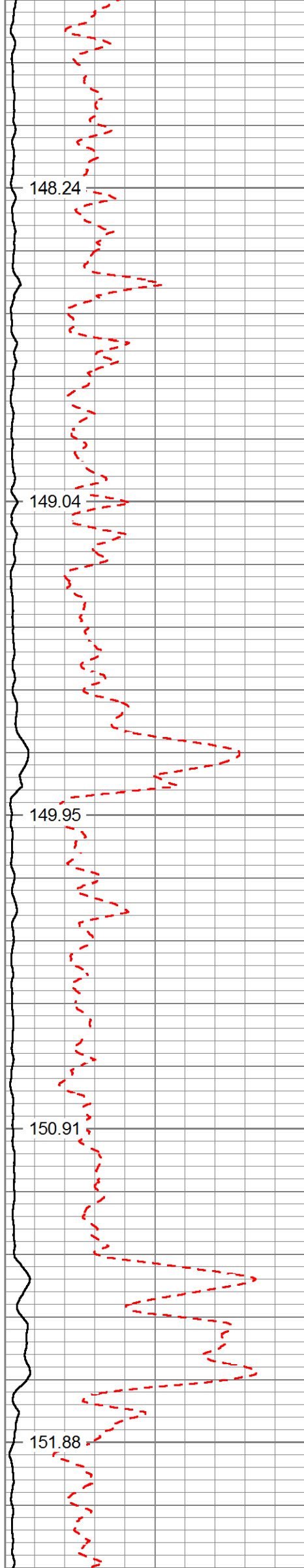




3700

3800

3900



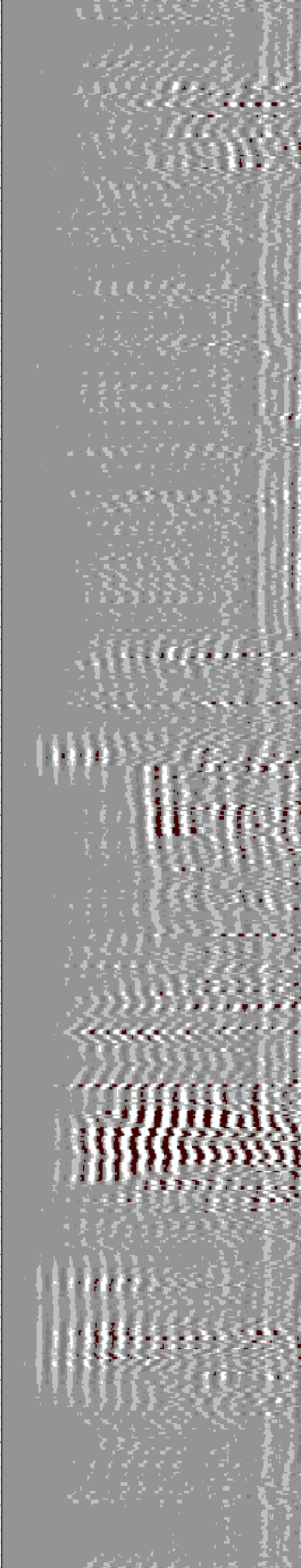
148.24

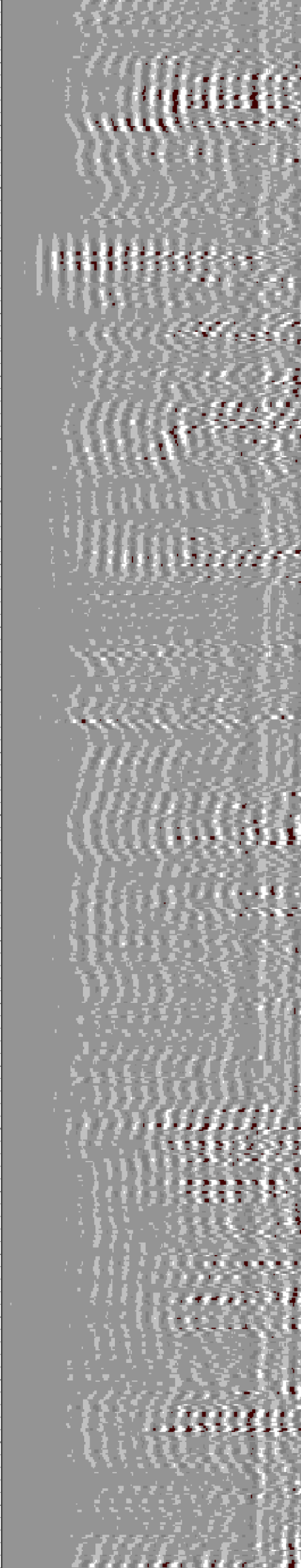
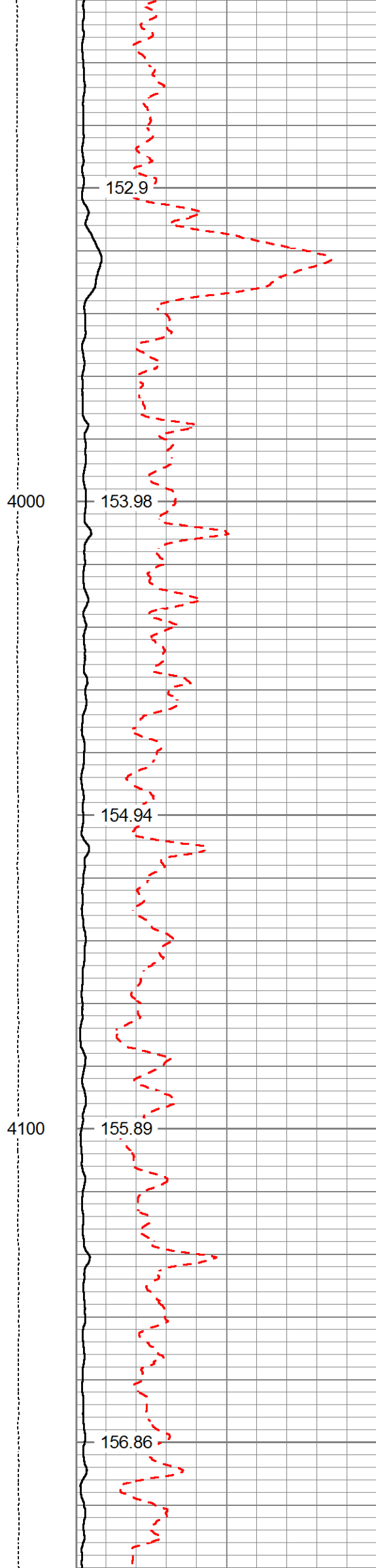
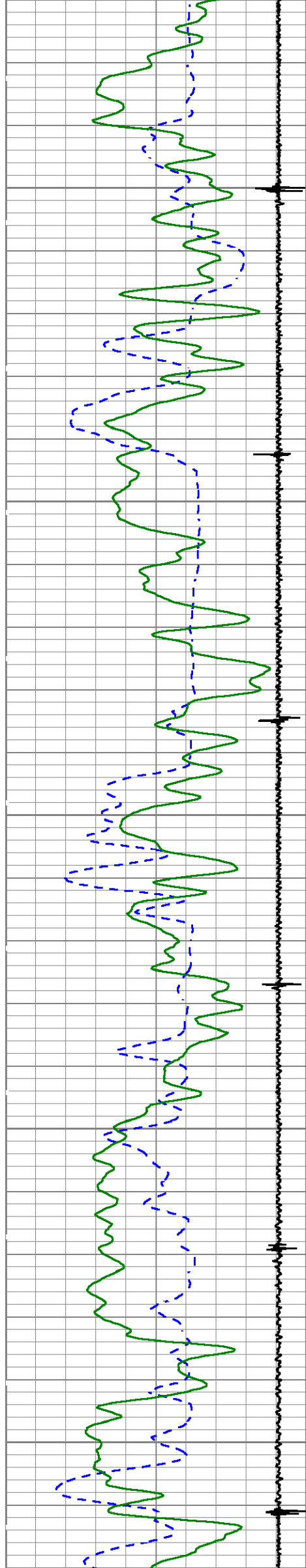
149.04

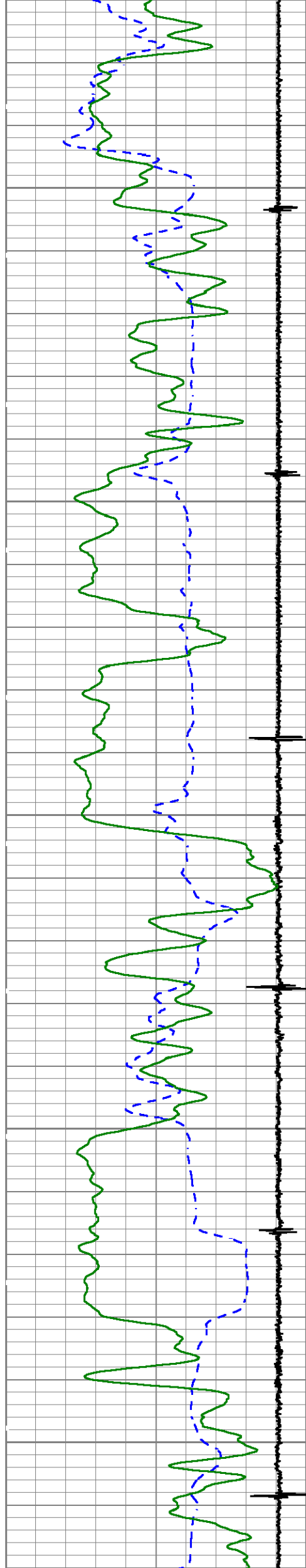
149.95

150.91

151.88



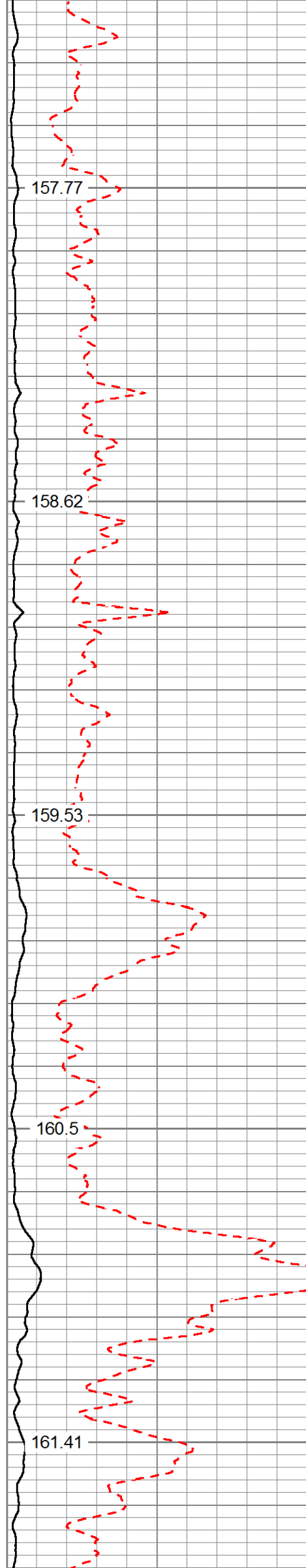




4200

4300

4400



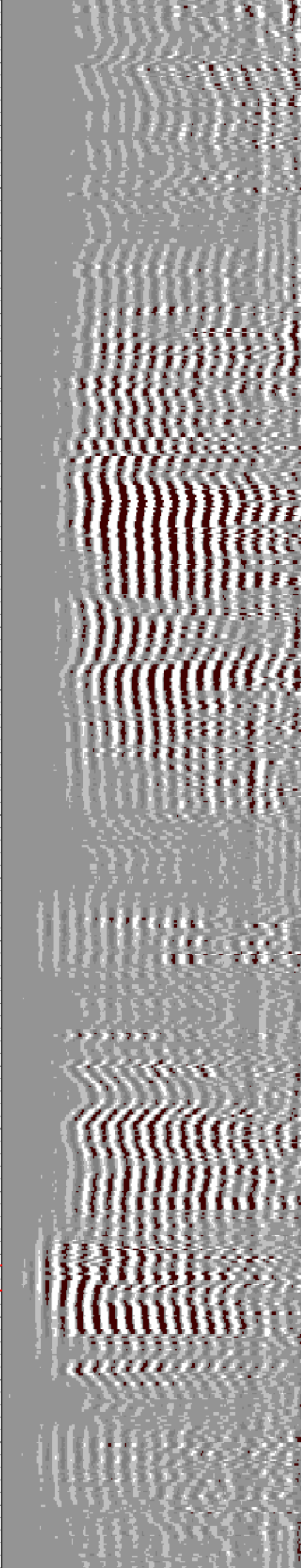
157.77

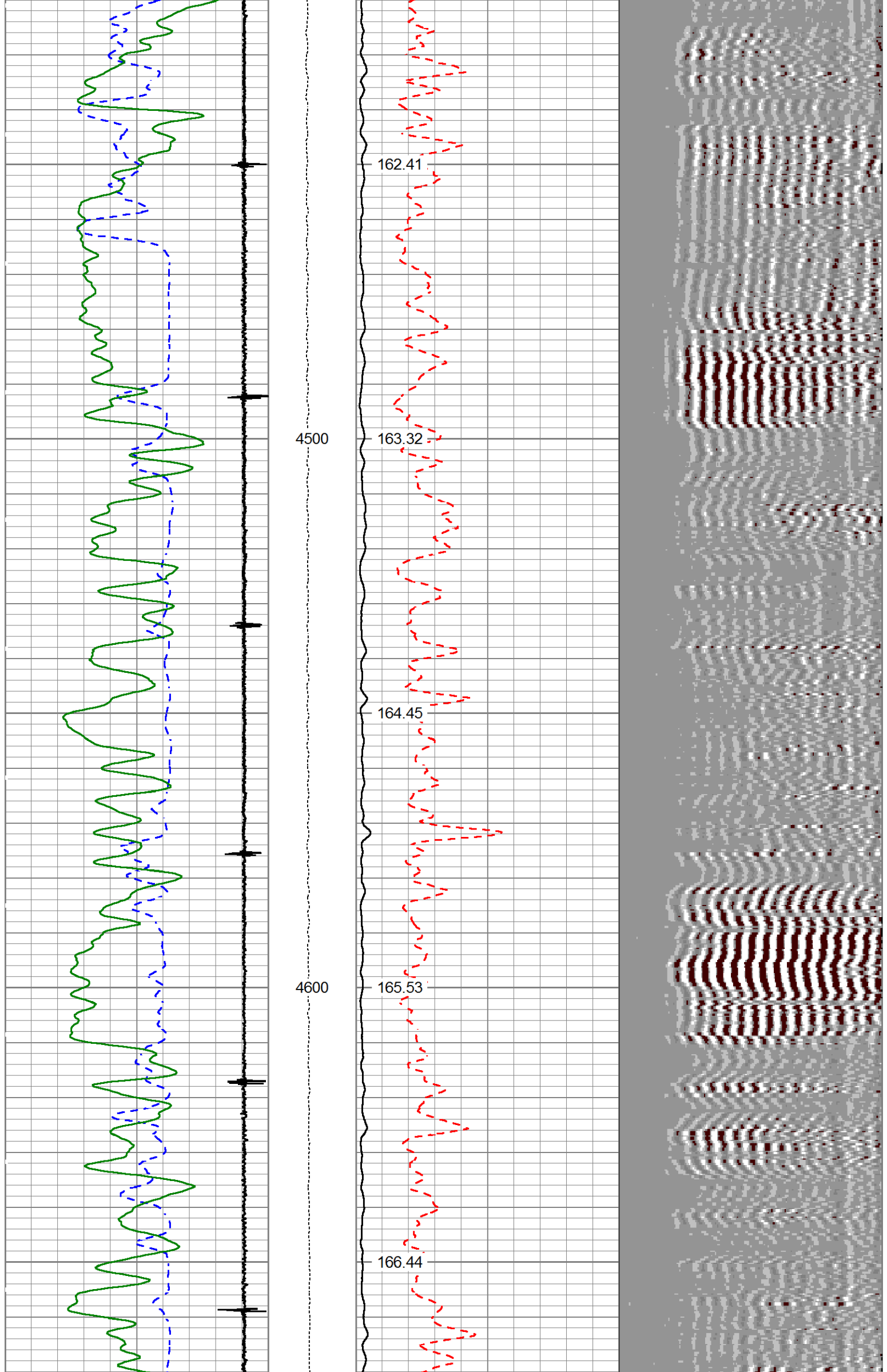
158.62

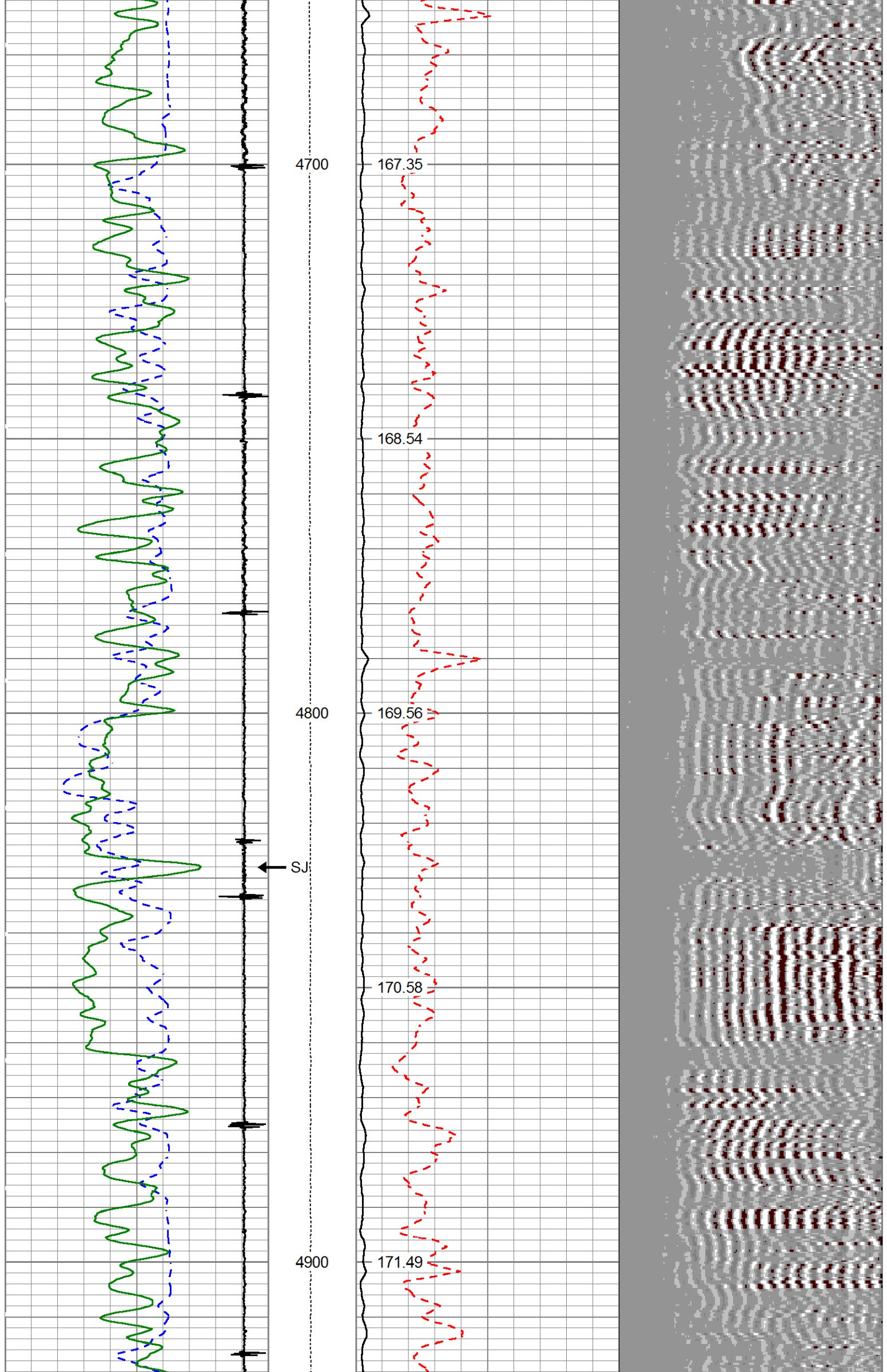
159.53

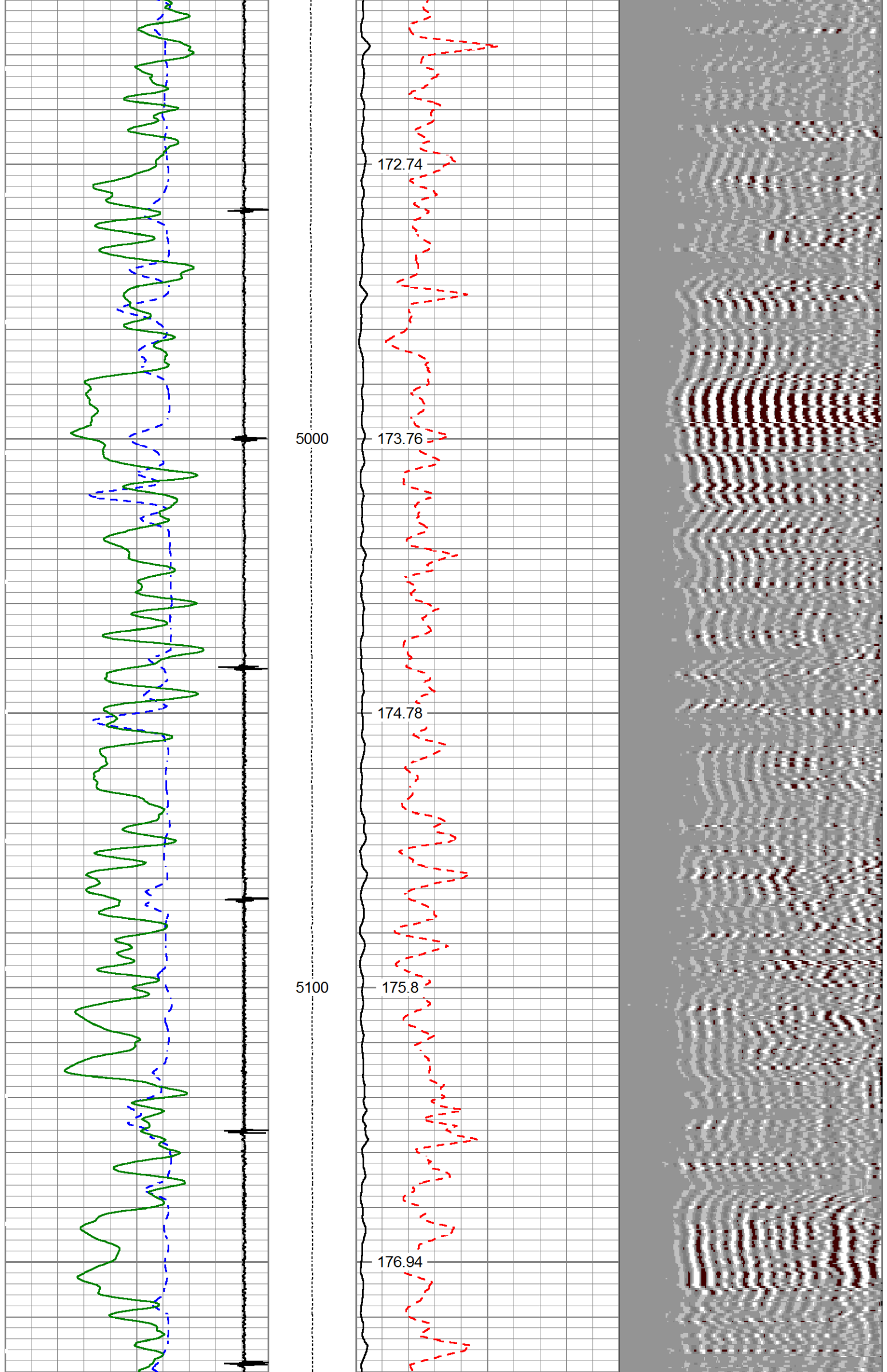
160.5

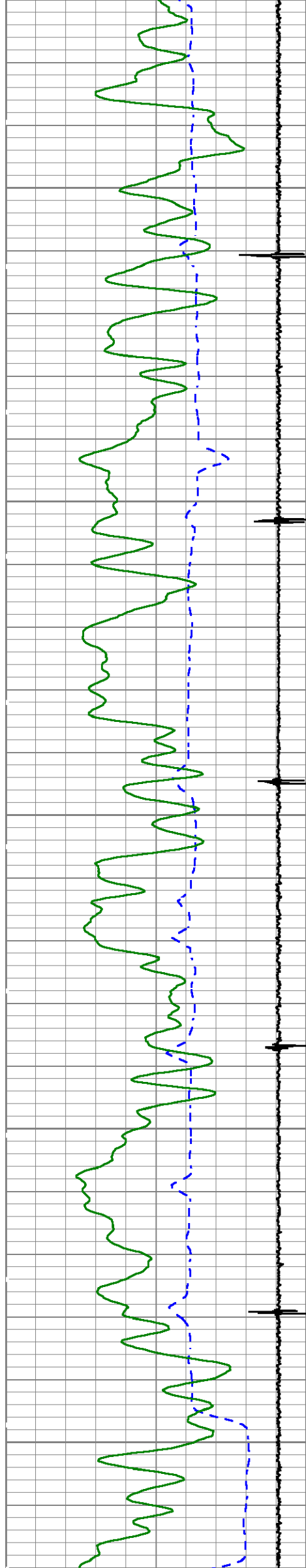
161.41







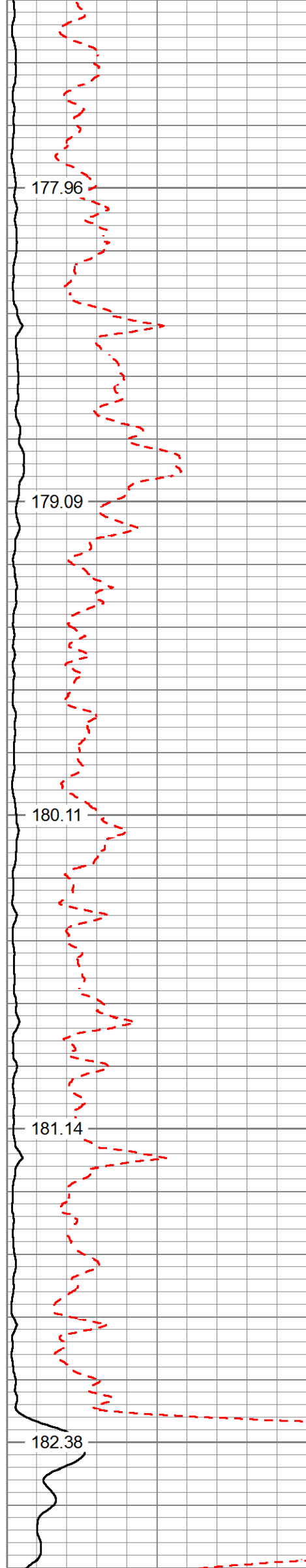




5200

5300

5400



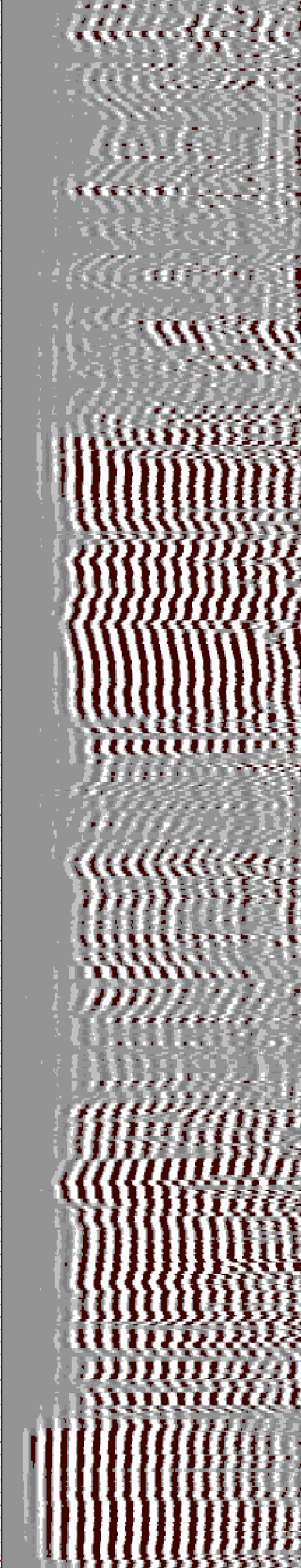
177.96

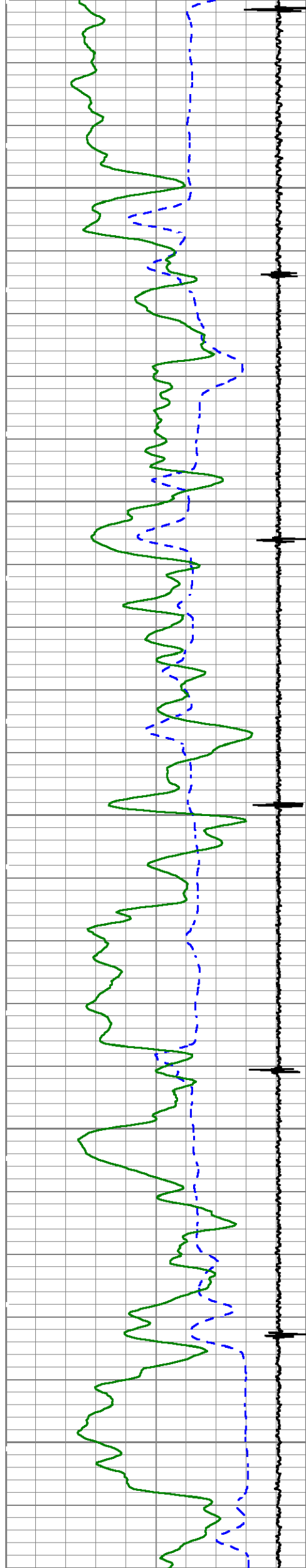
179.09

180.11

181.14

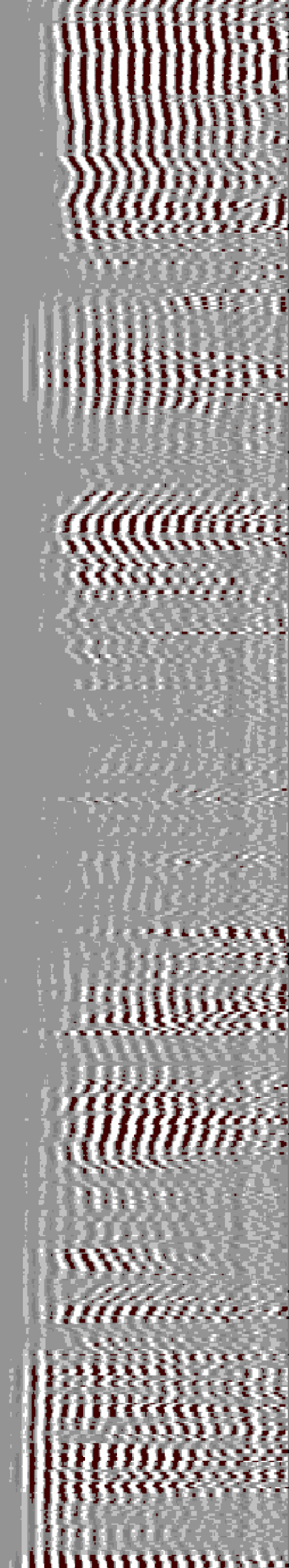
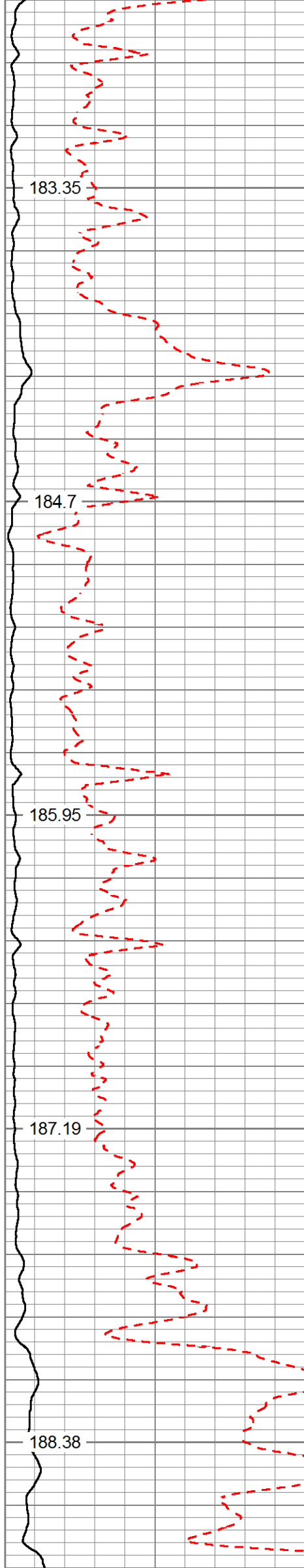
182.38

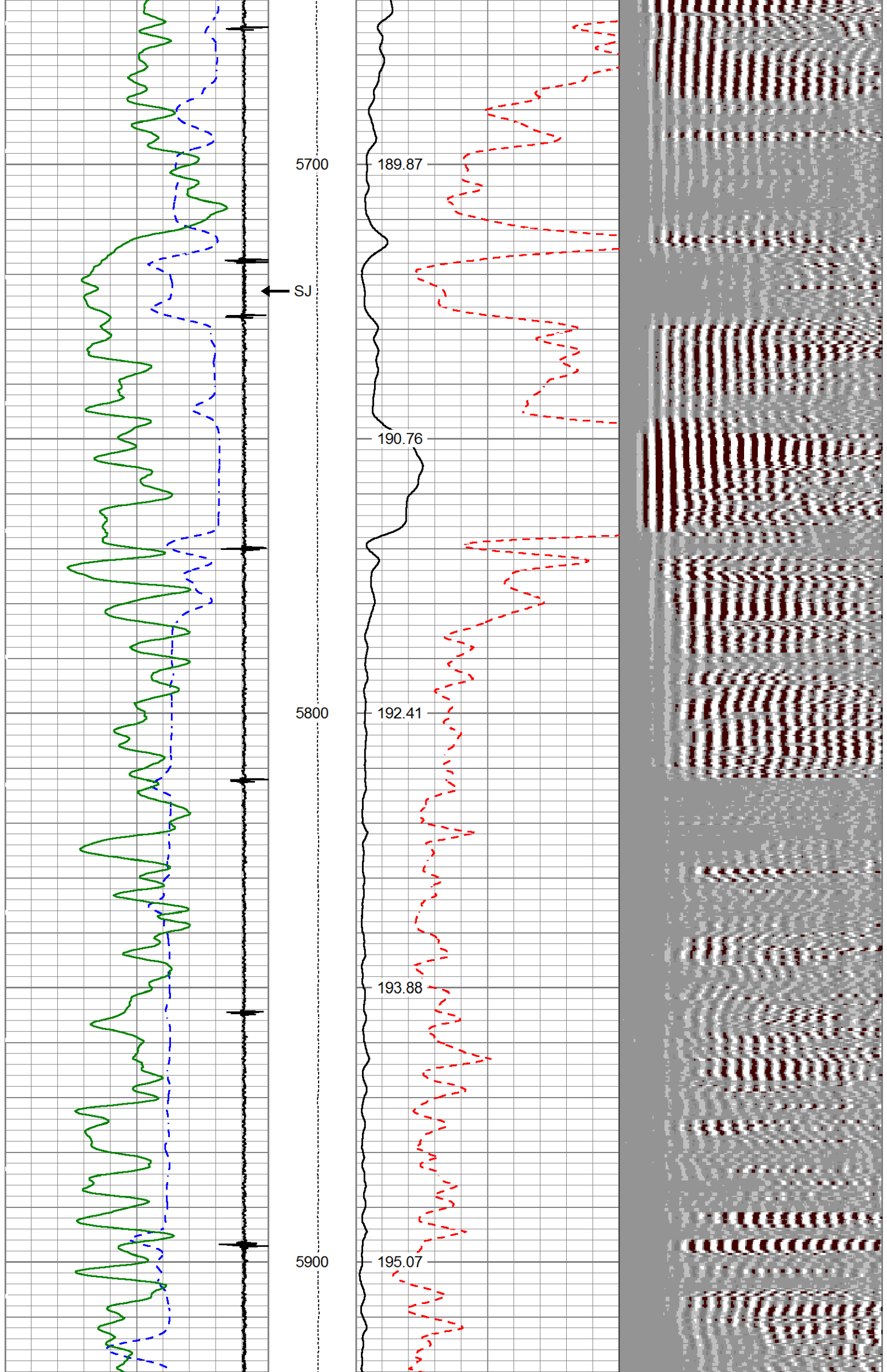


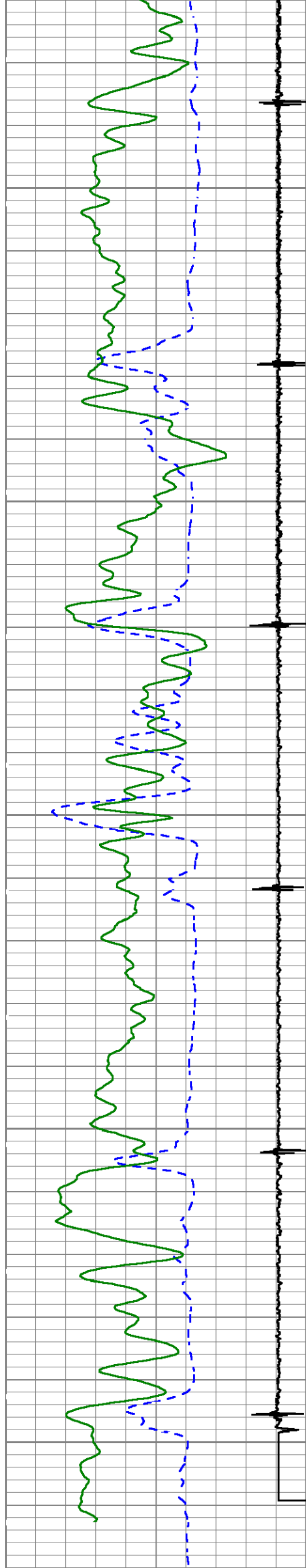


5500

5600

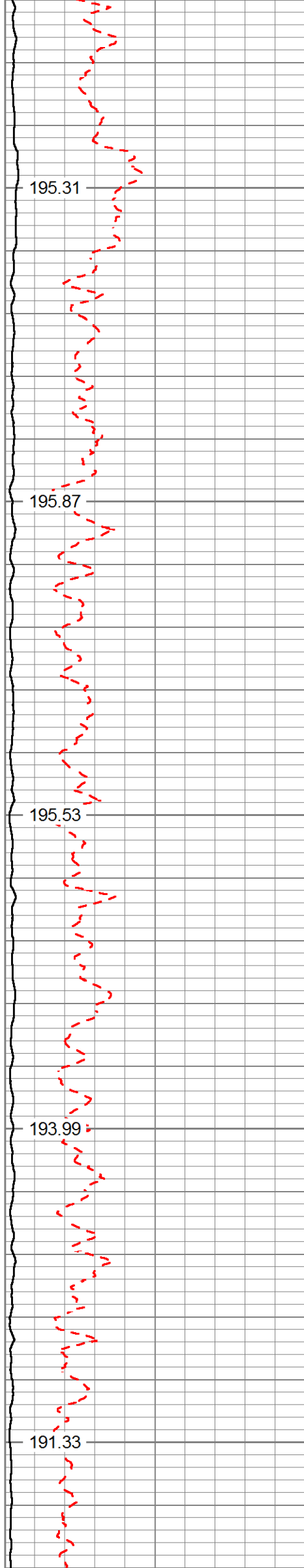






6000

6100



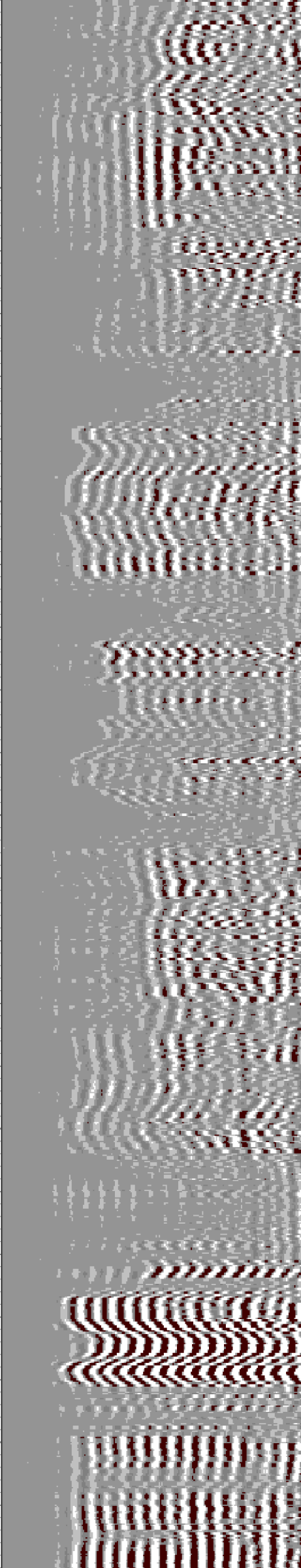
195.31

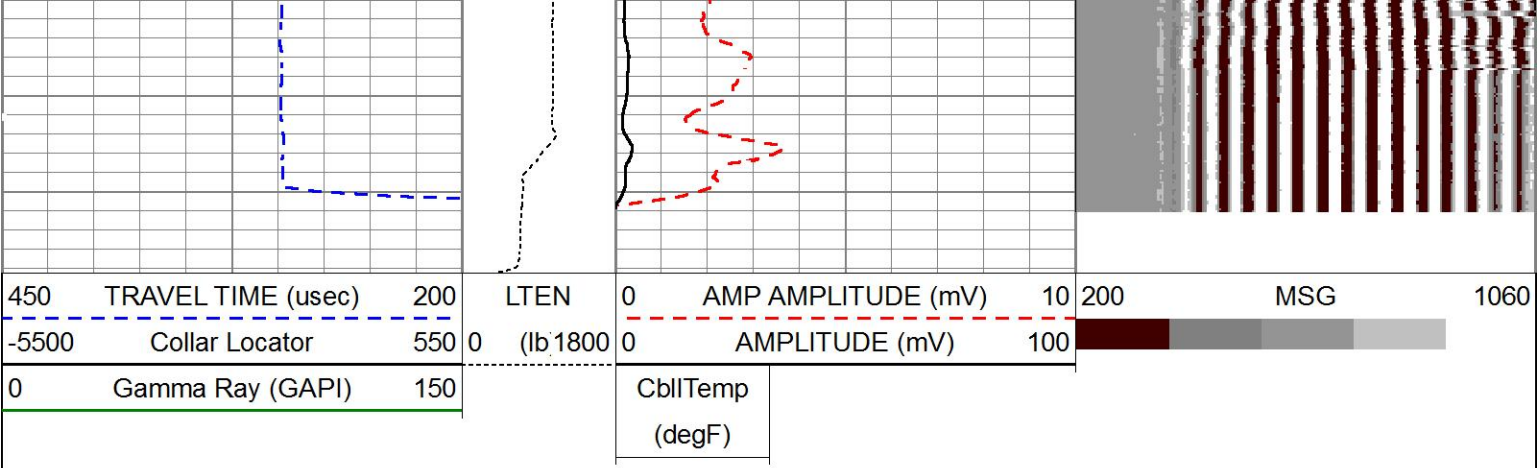
195.87

195.53

193.99

191.33





MAIN PASS

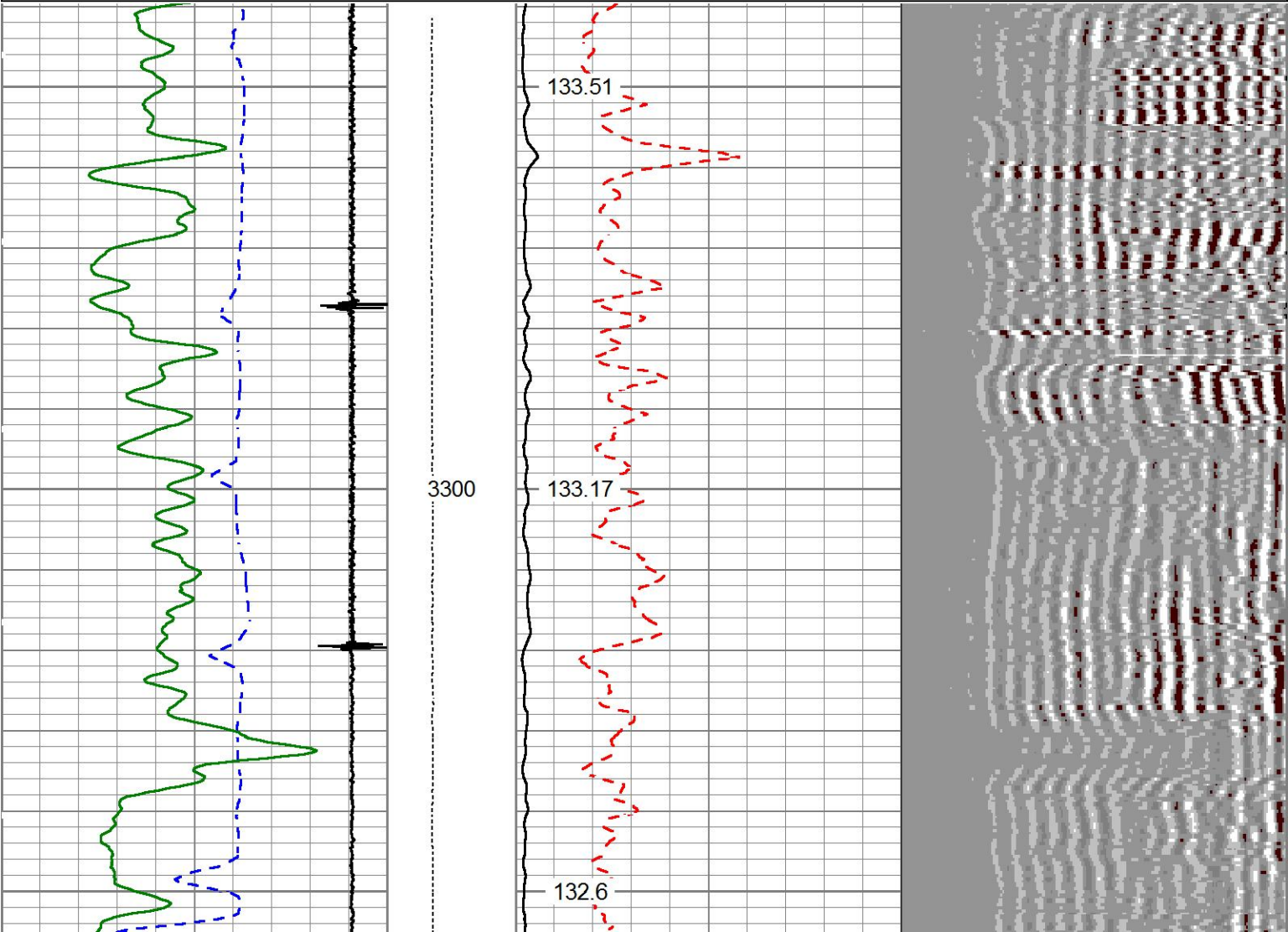
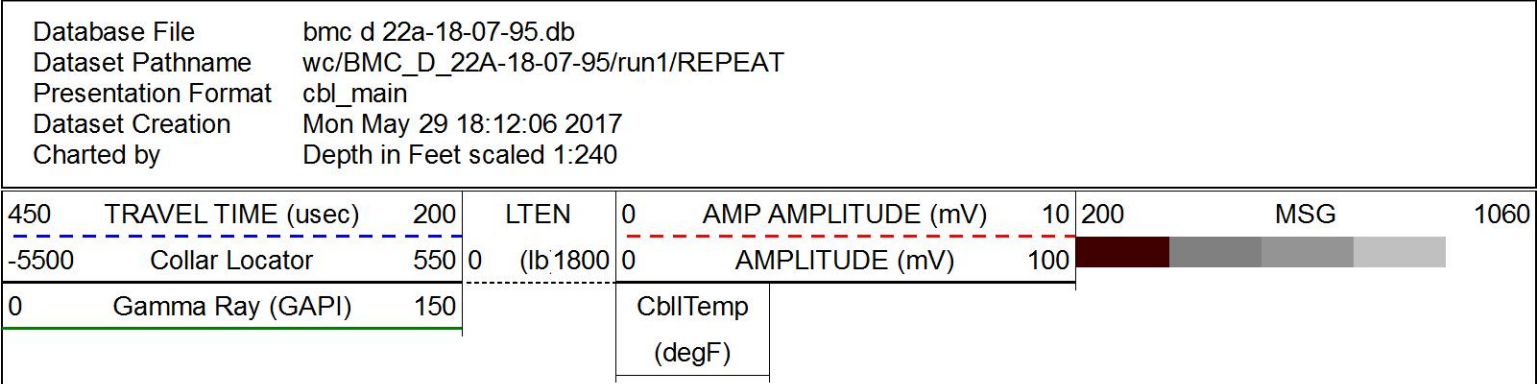
5"=100'

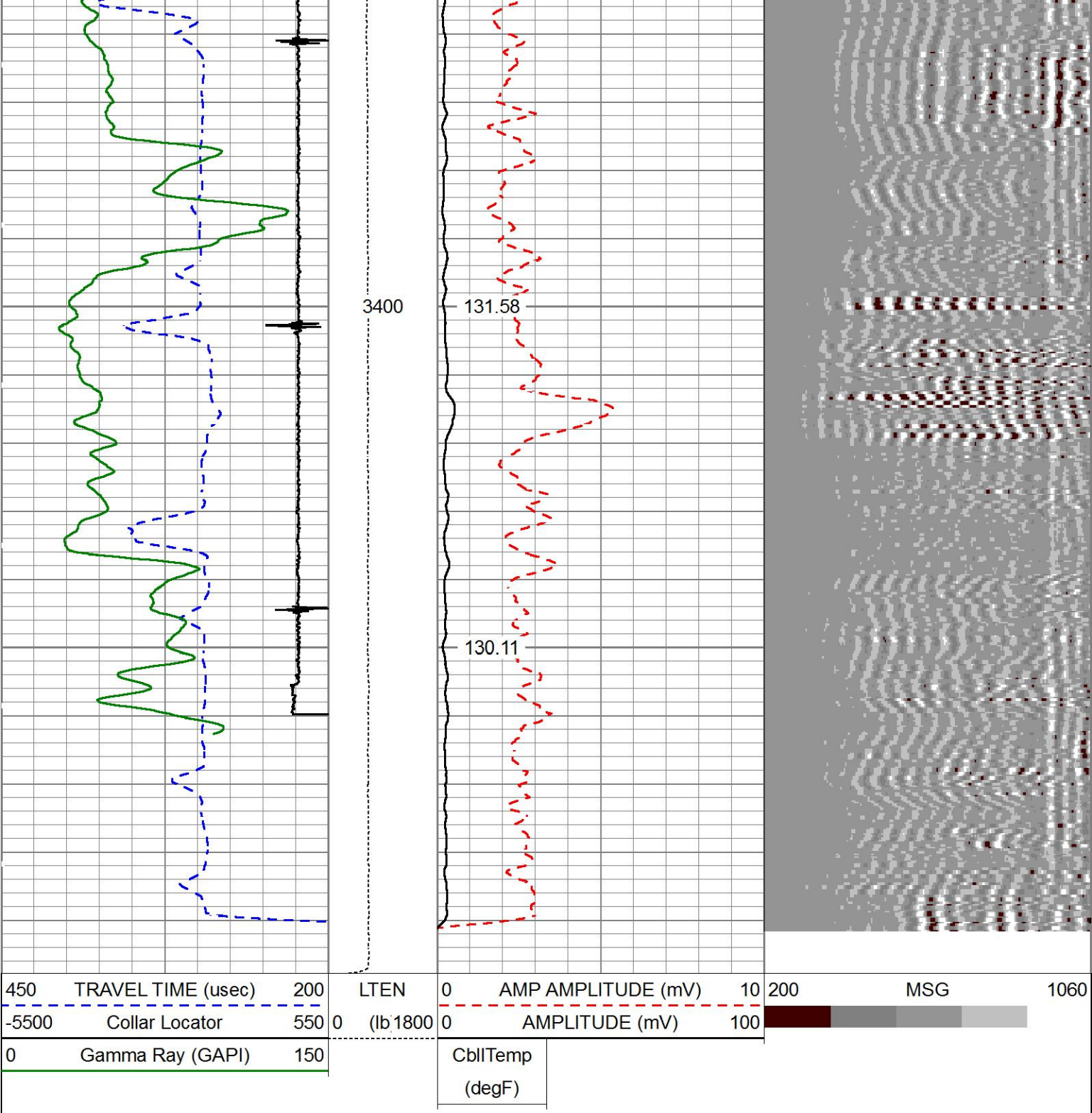
HALLIBURTON

REPEAT PASS

5"=100'

HALLIBURTON





HALLIBURTON

REPEAT PASS


5"=100'


| | | | | | |
|---|--|---------------------------------|--|--------------------|--|
| Database File | | bmc d 22a-18-07-95.db | | Calibration Report | |
| Dataset Pathname | | wc/BMC_D_22A-18-07-95/run1/MAIN | | | |
| Dataset Creation | | Mon May 29 18:40:29 2017 | | | |
| Cement Bond Log Shop Calibration Report | | | | | |
| Serial-Model: | | 12091451-A | | | |
| Calibration Performed: | | Mon May 29 14:02:59 2017 | | | |

| | | |
|-----------------------|----------|-------|
| Free Pipe Calibration | | |
| TT | Measured | Units |
| Amplitude | 246.7 | usec |
| Log Base Line | 546.4 | mV |
| | 19.1 | mV |

| | | | | | |
|---|-----------|--------------------------|-----------|----------|-------|
| Calibration References and Gain | | | | | |
| Name | Value | Units | | | |
| Pipe O.D. | 4.500 | in | | | |
| Pipe Weight | 11.6 | lb/ft | | | |
| Pipe Ref. Amp. | 81.2 | mV | | | |
| Amp. Gain | 0.150 | | | | |
| Reservoir Monitor Tool I Calibration Report | | | | | |
| Serial-Model: | | 12376244-A | | | |
| Shop Calibration Performed: | | Mon May 22 10:29:12 2017 | | | |
| | | | | | |
| Carbon/Oxygen Mode | | | | | |
| Stabilization | | | | | |
| Result | Logged | Expected Value | Diff. | Tol. | Units |
| GENV | 85.00 | 80.00 | 5.00 | +/-15.00 | V |
| ITCR2 | 3094 | 3250 | -156 | +/-250 | cps |
| Near Detector | | | | | |
| | Channel | Expected Value | Amplitude | FWHM | Tol. |
| H | 60 | 60 +/-2 | 0.0297 | 5.30 | <6.00 |
| Fe | 207 | 206 +/-2 | 0.0985 | ----- | ----- |
| NGAIN = 0.993 NZOFF = 0.8 | | | | | |
| Far Detector | | | | | |
| | Channel | Expected Value | Amplitude | FWHM | Tol. |
| H | 60 | 60 +/-2 | 0.0332 | 6.30 | <6.50 |
| Fe | 209 | 208 +/-2 | 0.0907 | ----- | ----- |
| FGAIN = 0.991 FZOFF = 0.5 | | | | | |
| Flask Temperature | 50.6 degF | | | | |
| Result | Logged | Expected Value | Diff. | Tol. | Units |
| COIR2 | 0.45 | 0.45 | -0.00 | +/-0.02 | |
| LIRI2 | 1.36 | 1.36 | 0.00 | +/-0.05 | |
| TCCR2 | 4834 | 4000 | 834 | +/-1000 | cps |
| ITCR2 | 3081 | 3200 | -119 | +/-250 | cps |
| Sigma Mode | | | | | |
| Stabilization | | | | | |
| Result | Logged | Expected Value | Diff. | Tol. | Units |
| GENV | 87.00 | 80.00 | 7.00 | +/-15.00 | V |
| FCAP | 9885 | 10000 | -115 | +/-500 | cps |
| Horizontal Water Tank | | | | | |
| Result | Logged | Expected Value | Diff. | Tol. | Units |
| N/F Normalizer | 0.96 | 0.95 | 0.01 | | |
| N/F Inel Norm | 0.62 | 0.61 | 0.01 | | |
| RNF | 1.05 | 1.07 | -0.02 | +/-0.12 | |
| RINC | 1.62 | 1.64 | -0.02 | +/-0.18 | |
| SGFN | 24.10 | 24.00 | 0.10 | +/-0.50 | cu |
| SGFF | 22.95 | 22.85 | 0.10 | +/-0.50 | cu |
| FSIN | 23623 | 24000 | -377 | +/-2000 | cps |
| FCAP | 9982 | 10000 | -18 | +/-1000 | cps |
| NFTR | 0.83 | | | <5.00 | |
| FFTR | 0.92 | | | <5.00 | |
| NBKG | 178 | | | <500 | cps |
| FBKG | 99 | | | <500 | cps |

| | | | | | | |
|---------------------------------------|--------------|--------------------------|--------|---------|----------|--|
| FBKG | 99 | | | | | |
| RTN | 0.41 | 0.40 | 0.01 | +/-0.10 | usec | |
| RTF | 0.43 | 0.40 | 0.03 | +/-0.10 | usec | |
| Calibration Software Modules | | | | | | |
| HRMTI Module | 2015.5.4.0 | | | | | |
| RMTI Module | 2015.10.16.1 | | | | | |
| Log Data Acquisition Software Modules | | | | | | |
| HRMTI Module | 2015.5.4.0 | | | | | |
| RMTI Module | 2015.10.16.1 | | | | | |
| Gamma Ray Calibration Report | | | | | | |
| Type / Serial: | | 002 / 11527445 | | | | |
| SHOP CALIBRATION | | Mon May 22 11:40:46 2017 | | | | |
| | Counts/Sec. | Gain | Offset | Jig | Units | |
| Background | 22.8 | | | | cps | |
| Calibrator | 291.4 | | | | cps | |
| | | 1.3703 | | | GAPI/cps | |
| PRIMARY VERIFICATION | | | | | | |
| Background | 32.5 | | | | cps | |
| Calibrator | 395.1 | | | | cps | |
| Difference | | | | 362.6 | GAPI | |
| BEFORE SURVEY VERIFICATION | | | | | | |
| Background | 0.0 | | | | cps | |
| Calibrator | 0.0 | | | | cps | |
| Difference | | | | 0.0 | GAPI | |
| AFTER SURVEY VERIFICATION | | | | | | |
| Background | 0.0 | | | | cps | |
| Calibrator | 0.0 | | | | cps | |
| Difference | | | | 0.0 | GAPI | |

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) | |
|---------|-------------|---|--|-------------|-----------|-------------|--|
| CCL | 35.86 |  | STNDCH-STND_CH 1.4375 IN CABLE HEAD | 1.50 | 1.44 | 1.00 | |
| | | | | | | | |
| GR | 33.60 | | TTTCU-002 (11527445) Through Tubing Telemetry Cartridge - Ultrawire | 7.65 | 1.69 | 37.00 | |
| | | | | | | | |
| | | | XHU-003 (12461937) Crossover Halliburton 1553 to Ultrawire | 1.58 | 1.69 | 7.00 | |
| | | | | | | | |
| RmtTFGT | 22.95 | | | | | | |
| RmtTNCT | 22.45 | | | | | | |

| | | | | | | |
|---|-------|--|---|-------|------|--------|
| RmtFP5V | 14.70 |  | RMTI-A (12376244) Halliburton RMTI Tool | 14.00 | 2.13 | 77.00 |
| RmtNFwvMcsP | 14.70 | | X-OVER-SondexxGo Sondex Box x Go Pin Cross Over | 0.31 | 1.69 | 1.00 |
| RmtCommFWa | 14.70 | | CENT-CASTM-CENT CAST M INLINE CENTRALIZER | 2.16 | 3.13 | 25.00 |
| Temp | 9.57 | | | | | |
| TT3FT | 7.32 | | HCBLM-A (12091451) Halliburton HCBLM Tool | 9.38 | 2.75 | 116.00 |
| AMP3FT | 7.32 | | | | | |
| WVF5FT | 6.36 | | | | | |
| WVF3FT | 2.84 | | CENT-CASTM-CENT CAST M INLINE CENTRALIZER | 2.16 | 3.13 | 25.00 |
| LLMTEN | 0.00 | | AUH-001 (11734726) Adaptor Ultrawire/Halliburton | 0.38 | 1.69 | 3.00 |
| | | | BUL-001 (000001) Bullnose | 0.30 | 1.69 | 1.50 |
| Dataset: bmc d 22a-18-07-95.db: wc/BMC_D_22A-18-07-95/run1/MAIN Total length: 39.43 ft Total weight: 293.50 lb O.D.: 3.13 in | | | | | | |

| | | | | | |
|-------------|---------------------------|--|-------|----|--|
| Company | URSA OPERATING COMPANY | | | | |
| Well | BMC D 22A-18-07-95 | | | | |
| Field | WILDCAT | | | | |
| County | GARFIELD | | State | CO | |
| HALLIBURTON | CEMENT BOND LOG GR-CCL | | | | |